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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,420	02/11/2002	Tony Mule'	62004-1880	6999

24504 7590 12/19/2003

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EXAMINER	
ARTMAN, THOMAS R	
ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,420	MULE' ET AL.	
	Examiner	Art Unit	
	Thomas R Artman	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,6-9,15,29 and 31-41* is/are pending in the application.

4a) Of the above claim(s) *34-41* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,6-9,15,29 and 31-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Newly submitted claims 34-41 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the newly submitted claims define a patentably distinct species of a waveguide that has a sacrificial layer that engages a portion of a waveguide core, and the originally elected invention has an air-gap cladding layer that engages a portion of a waveguide core. There are no generic claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 34-41 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Horiguchi (US 3,950,073).

Regarding claim 1, Horiguchi discloses an optical waveguide (Fig.1) that has:

1) a waveguide core (item 1),

2) an air-gap cladding (item 3) engaging a portion of the waveguide core, and

3) an overcoat layer (item 2) engaging a portion of the air-gap cladding.

With respect to claim 31, Horiguchi's overcoat layer is made of silicon dioxide (col.2, lines 49-56).

Claims 1, 3, 6, 7, 15, 29 and 31-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Wojnarowski (US 5,737,458).

Regarding claims 1 and 29, Wojnarowski discloses an optical waveguide (Fig.9), including:

1) a waveguide core (item 82),

2) an air-gap cladding (item 106) engaging a portion of the waveguide core, and

3) an overcoat layer (item 90) engaging a portion of the air-gap cladding.

Further regarding claim 29, Wojnarowski also discloses the method of operating a chip-level electronic package (Fig.9), coupling an optical signal to a waveguide in the package and communicating the optical signal through the waveguide described above.

With respect to claim 3, Wojnarowski further discloses a lead (item 92), where the air-gap layer (106) is disposed substantially under a portion of the lead and the waveguide is adjacent the air-gap layer (this can also be seen in Fig.14, where lead 162'' is over the air-gap).

With respect to claim 6, Wojnarowski further discloses a coupling element (waveguide segment 108) that engages the air-gap cladding.

With respect to claim 7, Wojnarowski further discloses the waveguide having a coupling element (waveguide segment 108).

With respect to claim 15, the core is adjacent to a lower cladding layer (item 104).

With respect to claims 31-33, the overcoat layer is made out of a polyimide (col.8, lines 28-31).

Claims 1, 3 and 15 rejected under 35 U.S.C. 102(b) as being anticipated by Boysel (US 5,278,925).

Regarding claim 1, Boysel discloses, in Fig.1,

1) a waveguide core (item 16),

2) an air-gap cladding layer engaging a portion of the core (etched-away portion of layer 18), and

3) an overcoat layer (item 22) engaging a portion of the air-gap cladding.

With respect to claim 3, Boysel discloses a lead (item 22), where an air gap layer is substantially under it, and the waveguide core is adjacent the air-gap layer.

With respect to claim 15, Boysel discloses a lower cladding layer (item 14) adjacent to the waveguide core.

Claims 1, 6, 7, 9 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Koh (US 5,416,861).

Regarding claim 1, Koh discloses a chip-level electronic package (Figs.4 and 11), including:

1) a waveguide core 46,

2) an air-gap cladding around a portion of the waveguide core, and

3) an overcoat layer 88 engaging a portion of the air-gap cladding.

With respect to claim 6, Koh further discloses a coupling element adjacent to the waveguide core (generally item 38) and engaging the air-gap cladding.

With respect to claim 15, Koh further discloses a lower cladding layer 40 adjacent to the core.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koh and in view of Schultz (US 6,285,813).

Regarding claim 7, Koh's coupling element is not included in the waveguide. The coupling element is adjacent to the waveguide.

Schultz teaches the use of a volume grating coupling element 106 that is either adjacent to (Fig.1A), or included in (Fig.1B), a waveguide 103. As one skilled in the art would recognize, the formation of the coupling element in the waveguide is much simpler and would have greater coupling efficiency since the light is going into and out of the waveguide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Koh to have the waveguide include the coupling element such that greater manufacturing economics and improved signal integrity can be realized.

With respect to claim 8, Schultz's grating is a volume coupler grating.

With respect to claim 9, Koh and Shultz both have their air cladding layers around a portion of their coupling elements.

Response to Arguments

Applicant's arguments filed October 29th, 2003, have been fully considered but they are not persuasive. The applicant asserts that Horiguchi, Wojnarowski and Boysel do not teach or suggest an overcoat layer engaging a portion of the air-gap cladding. The examiner respectfully disagrees. As stated in the rejections of claims 1 and 29 above, all three disclose an overcoat layer. In order to have an air-gap, there must be an overcoat layer to define the gap. Accordingly, Wojnarowski is considered to show an overcoat layer, item 106 of Fig.9, for example. Horiguchi shows a similar overcoat layer, item 2 of Fig.1, and Boysel shows an overcoat layer, item 22 of Fig.2, for example. Further, Koh shows an overcoat layer, item 88 of Fig.11, that defines an air gap cladding above the waveguide 46 in the chip-level electronic package.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R Artman whose telephone number is (703) 305-0203. The examiner can normally be reached on 9am - 6:30pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Thomas R. Artman
Patent Examiner
December 11, 2003

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER